

1 **WHAT IS CLAIMED IS:**

2 1. A hypocycloid reducing apparatus comprising:

3 an outside bracket being hollow and having a proximal end, a distal end
4 and a passage with multiple lobe grooves defined from the proximal end to distal
5 end;

6 an inside bracket with a proximal end and a distal end rotatably mounted
7 in the passage of the outside bracket and having

8 an inner space defined in the distal end of the inside bracket;

9 multiple through holes arranged into an annular arrangement,
10 corresponding to and aligned with the lobe grooves and each through hole
11 holding rotatably an actuating roller; and

12 an output shaft attached to the proximal end of the inside bracket
13 and extending out of the passage through the proximal end of the outside bracket;
14 and

15 a driven input mounted rotatably in the inner space of the inside bracket
16 and having an off-center assembly encountering sequentially with each of the
17 rollers to press the encountered roller that is in a respective one of the through
18 holes to encounter with a corresponding one of the lobe grooves;

19 wherein a quantity of the through holes is fewer than the quantity of the
20 lobe grooves.

21 2. The hypocycloid reducing apparatus as claimed in claim 1, wherein
22 the annular arrangement of the through holes has first and second annular
23 configurations that are complementary, and the off-center assembly on the
24 driven input has first and second off-center members that are located opposite to

1 provide a dynamic balancing to the driven input, and the first and the second
2 off-center members respectively encounter sequentially with a respective one of
3 the rollers in the through holes of the first and the second annular configurations.

4 3. The hypocycloid reducing apparatus as claimed in claim 2, wherein
5 the off-center assembly further comprises two actuating bearings mounted
6 respectively on the first and the second off-center members to encounter with the
7 actuating rollers.

8 4. The hypocycloid reducing apparatus as claimed in claim 1, wherein
9 the through holes are rectangular in cross section, and the actuating rollers are
10 cylinders.

11 5. The hypocycloid reducing apparatus as claimed in claim 2, wherein
12 the through holes are rectangular in cross section, and the actuating rollers are
13 cylinders.

14 6. The hypocycloid reducing apparatus as claimed in claim 3, wherein
15 the through holes are rectangular in cross section, and the actuating rollers are
16 cylinders.

17 7. The hypocycloid reducing apparatus as claimed in claim 6, wherein
18 the inside bracket further has an annular lip formed radially at the distal end of
19 the inside bracket and abuts rotatably the distal end of the outside bracket.

20 8. The hypocycloid reducing apparatus as claimed in claim 7, wherein
21 the inside bracket further has a bearing journal formed near the proximal end of
22 the inside bracket, the outside bracket further has an annular bearing groove
23 formed near the proximal end of the outside bracket and aligned with the bearing
24 journal, and a bearing is mounted on the bearing journal in the bearing groove to

- 1 hold the inside bracket in position.